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#### SANDWICH-TYPE BATTERY

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Soviet industry, in addition to manufacturing several dry-cell type batteries such as the BAS-60 and BAS-80, manufactures several sandwich-type batteries BAS-G-X-1, BAS-G-60-X-1.3, and others. The latter somewhat resembles the former. In internal construction, however, it differs greatly.

The sandwich-type battery is constructed so that the separate elements of the battery form a square briquette sandwich with slightly rounded edges. The basic elements are a thin zinc plate, a piece of cardboard impregnated with an electrolyte, and an agglomerate which is pressed into the form of a brick. The agglomerate is wrapped in thin paper. The zinc plate serves as the negative pole while the agglomerate is the positive element. The cell is impregnated with a liquid electrolyte and pressed. The edges are then sealed with a cellophane film.

Several sandwich cells are placed one next to the other and connected to each other, thus obtaining a "battery column." The cellophane film is of sufficient thickness to act as a satisfactory cover for the prevention of evaporation of the electrolyte. The zinc plate of the first sandwich is considered the negative pole, while the zinc plate in contact with the agglomerate in the last sandwich is used as the positive pole. This later pole is covered with a substance which will not penetrate the electrolyte, but which nevertheless conducts electric current very well. This assembly is then coated with a thin film of paraffin and wrapped in waxed paper.

The BAS-G-X-1.3 battery consists of two columns of 21 sandwiches each. It has an initial voltage of 57 volts per column. The voltage for the whole assembly is 75 volts, while its operating voltage is 60 volts.

In addition, the completed assembly is equipped with various taps. Connection of these taps to other sandwich batteries makes it possible to obtain voltages of 20 volts (between taps + 60 and + 40) or even 40 volts (if the extra batteries are hooked up between the center and the end tap).

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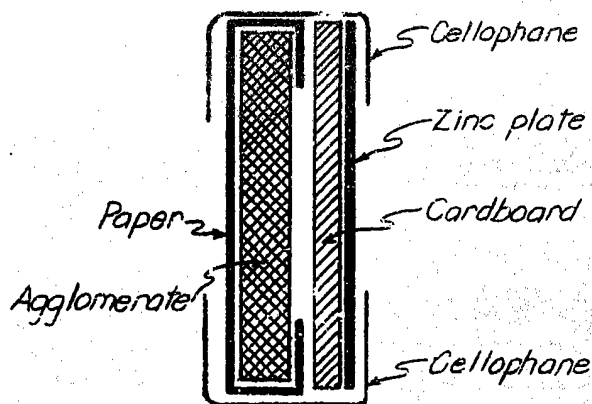
The sandwich-type battery does not require any involved procedure for connection. There is no special need for extra insulation or for the prevention of evaporation of the electrolyte.

Because of the few elements involved and the compact construction, this sandwich-type battery is much lighter than the ordinary battery. In addition, it is proportionally more powerful. For example, the BAS-G-60-X-1.3 has a 1.3 ampere-hour capacity. This is much more than the ordinary BAS-60 which has only 0.6 ampere-hours. The sandwich battery can be stored for 12 months without losing its service capacity.

The sandwich battery is best utilized for supplying the plate voltages of tubes. Two BAS-G-60 batteries can service a 6-tube "Rodina" receiver set for 1½ months. However, the BAS-G-60 is recommended for use with receivers which have only 2 - 3 tubes since their plate-current drain is very small.

There is one drawback, however, which has kept the demand low. The ordinary canister-type dry cell costs 16 rubles. The BAS-G-60-X-1,3 costs 26 rubles.

Cross Section of a Sandwich-Type Dry-Cell Battery



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